

IN THE CLAIMS:

Please cancel Claim 21 without prejudice. Please amend Claims 13, 17, 18, 20, and 22 as follows.

1. (Previously Presented) A method of forming a mask assembly for use in lithography comprising the steps of:

forming a support structure that comprises a substrate that includes an initial plurality of windows;

filling the initial plurality of windows with a temporary fill material;

forming an additional plurality of windows in portions of said substrate which do not contain the temporary fill material;

filling the additional plurality of windows in the substrate with a temporary fill material;

forming over the filled-windowed substrate a mask; and

essentially completely removing the temporary fill material.

2. (Original) The method of claim 1 wherein the mask comprises a membrane layer covered by a mask layer.

3. (Original) The method of claim 1 wherein the mask is a stencil mask.

4. (Previously Presented) A method of forming a mask assembly for use in lithography comprising the steps of:

a) forming a support structure that comprises a substrate that includes a first plurality of windows;

b) filling the first plurality of windows with a temporary fill material;

- c) forming an additional plurality of windows in portions of said substrate which do not contain the temporary fill material;
- d) filling the additional plurality of windows in the substrate with a temporary fill material;
- e) forming over the filled-windowed substrate a membrane layer for capable of supporting a mask layer;
- f) forming a mask layer over the membrane layer; and
- g) essentially completely removing the temporary fill material.

5. (Cancelled)

6. (Previously Presented) The method of claim 4, wherein steps c) and d) are repeated at least once.

7. (Previously Presented) The method of claim 6 in which the windows are in a two dimensional array of rows and columns and in which the first plurality of windows consists of alternate windows in each row and column.

8. (Previously Presented) A method of forming a mask assembly comprising the steps of:

forming in a substrate a support structure major and minor struts that define an array of windows, in the form of a two-dimensional array of rows and columns, by successive rounds of cutting in the substrate a fraction of the total window area to be formed;

filling such fraction of windows with a temporary fill material before the succeeding round of cutting until all the window areas are cut and filled;

forming a membrane layer over a top surface of the support structure;

forming a mask layer over the membrane layer; and  
essentially completely removing the fill material from the windows.

9. (Previously Presented) The method of claim 8 in which a first round of cutting involves cutting approximately one half of the windows to be cut and a second round involves the remainder.

10. (Original) The method of claim 9 in which the first round of cutting is of alternate windows in each row and column.

11. (Original) The method of claim 4 in which the support structure is formed by the steps of:  
placing in a mold which is shaped to facilitate the formation of a support structure a plurality of parallel minor struts; and

forming in the mold a support structure that comprises a frame and plurality of major struts that are orthogonal and attached to the minor struts with the major and minor struts defining a plurality of windows arranged in a two dimensional array of rows and columns.

12. (Original) The method of claim 11 further comprising the step of removing the support structure from the mold.

13. (Currently Amended) A method of forming a mask assembly for use in lithography, comprising the steps of:

- a) forming a support structure that comprises a substrate that includes a first plurality of windows;
- b) filling the first plurality of windows with a temporary fill material;

- c) forming an additional plurality of windows in portions of said substrate which do not contain the temporary fill material;
- d) filling the additional plurality of windows in the substrate with a temporary fill material;
- e) forming over a surface of a second substrate a layer suitable for ~~the~~ a mask layer, followed by a layer suitable for ~~the~~ a membrane layer;
- f) bonding the membrane layer to the filled, windowed substrate; and
- g) removing selectively the second substrate to expose the mask layer.

14. (Previously Presented) The method of claim 13 in which the second substrate is implanted with ions to create in its interior an ion-implanted region adjacent one major surface of the second substrate, which one surface is opposite a second major surface to which said mask layer and said membrane layer are applied, and wherein the second substrate is removed in part by cleaving along the ion-implanted region.

15. (Cancelled)

16. (Previously Presented) A method of forming a mask assembly for use in electron beam lithography comprising the steps of:

- forming in a substrate a first set of spaced-apart windows;
- filling the windows with a temporary fill material;
- forming in the substrate a second set of windows in the spaces between the first set of windows, thereby forming in combination with the first set of spaced-apart windows a two-dimensional array of windows arranged in rows and columns;
- filling the second set of windows with a temporary fill material;

depositing over the filled-windowed substrate a layer suitable for supporting a mask;  
depositing over the layer suitable for forming a mask an additional layer suitable for providing a mask;  
patterning the layer suitable for providing a mask, to form a mask; and  
removing the temporary fill from the windows.

17. (Currently Amended) The method of claim 16 in which the substrate is selected from the group consisting of aluminum oxide and silicon carbide, the ~~membrane is~~ layer suitable for supporting a mask comprises a material selected from the group consisting of silicon, silicon nitride, silicon carbide, diamond, and aluminum oxide, and the mask is selected from the group consisting of tungsten and tantalum silicon nitride.

18. (Currently Amended) The method of claim 16 in which the major surfaces of the filled-windowed substrate are planarized and made parallel before the deposition of the ~~membrane~~ layer suitable for supporting a mask.

19. (Previously Presented) A method of forming a mask support structure, comprising the steps of:

forming in a substrate a set of windows spaced apart by major strut portions;  
forming a plurality of spaced apart grooves in the major strut portions of the substrate; and  
placing one of a plurality of minor strut elongated strips in each of the spaced apart grooves.

20. (Currently Amended) A method of forming a mask assembly comprising the steps of:

forming a molded support structure that defines an array of open windows arranged in rows and columns, wherein said molded support structure comprises a frame and major and minor struts which form said array of open windows, and wherein said major struts are orthogonal to minor struts, with said minor struts being placed into a mold prior to forming of said major struts and said frame which supports said major and minor struts ;

filling the window openings with a temporary fill material;

forming over the support structure a membrane layer;

forming over the membrane layer a patterned mask; and

removing the temporary fill material.

21. (Cancelled)

22. (Currently Amended) A method of forming a mask support structure comprising the steps of:

forming in a substrate a first set of spaced apart windows; followed by

filling the first set of windows with a temporary fill material; followed by

forming in the substrate a second set of windows located in portions of the substrate adjacent to the first set of filled windows; and followed by

filling the second set of windows with a temporary fill material.

23. (Previously Presented) A method of forming a mask support structure comprising the steps of:

placing in a mold which is shaped to facilitate the formation of a mask support structure a plurality of parallel minor struts;

forming in the mold a mask support structure that comprises a frame and plurality of major struts, where the major struts are orthogonal and attached to the minor struts with the major and minor struts defining a plurality of open windows arranged in a two dimensional array of rows and columns; and

filling the open windows with a temporary fill material.

24 - 46. (Cancelled)